

		COMMISSIONING FORM AIR CONDITIONER		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

Air Conditioner Location & Data	A/C Equipment No.		A/C Location: ☐ Ducted ☐ Ductless		Fed From:	
	Drawings:	Single Line:	Mech. Schedule:		Schematic: ☐ N/A	
	A/C Ratings:	Manufacturer:		Model:		Serial #:
		Power: kW Ton Size:	Rated Voltage: VAC	Full Load Amps: A	☐ 1-Phase ☐ 3-Phase	

Visual Inspection / Cleaning	Air Conditioner Lamacoid Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No	
	Power Cables Labelled: ☐ Yes ☐ No		Appropriate Breaker / Fuse Size Installed: ☐ Yes ☐ No	
	Appropriate Duct / Ductless Installation: ☐ Yes ☐ No		Sufficient Ton Size Installed: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		A/C Unit Properly Installed: ☐ Good ☐ Acceptable ☐ Poor	
	Power Connection: ☐ Good ☐ Acceptable ☐ Poor		Ground Connection: ☐ Good ☐ Acceptable ☐ Poor	
	Fully Functional Controller: ☐ Good ☐ Acceptable ☐ Poor		Controller Display Works: ☐ Good ☐ Acceptable ☐ Poor	
	Remote Controller Installed: ☐ Yes ☐ No ☐ N/A		Remote Controller Cable Labelled: ☐ Yes ☐ No ☐ N/A	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

Air Conditioner Electrical Testing	Test Preparation:		Setup: ☐ Isolated	Power Cable ☐ Disconnected ☐ Connected	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.	
	WARNING: DISCONNECT ALL FIELD POWER CABLES PRIOR TO TEST.					
	Test	Test Voltage	Insulation Resistance (MΩ)			Ground all phases not under test!
			Phase A	Phase B	Phase C	
	Contactor Line to Ground	VDC				
	Contactor Load to Ground	VDC				
						Test Summary ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed
	Test	Tester	Resistance (μΩ)			
			Phases A-B	Phases B-C	Phases C-B	
	Heating Element	Fluke Meter				
Comments:						

		COMMISSIONING FORM AIR CONDITIONER		Page 2 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Full Load Operational Testing	TESTING: AIR CONDITIONER TO BE RUN FOR FIVE (5) MINUTES POINT PRIOR TO RECORDING VALUES.					
	Temperature		Turn On Setpoint: °C	Actual Turn On Setpoint: °C		
	A/C Loads	Device	Measured Current			
			Phase A	Phase B	Phase C	
		Compressor ☐ N/A	A	A	A	
		Fan ☐ N/A	A	A	A	
		Heater ☐ N/A	A	A	A	
	Contactor	Description	Controller Contact Status	Contactor Status		A/C Status
		Contactor ☐ N/A	Closed Opened	☐ Closed ☐ Opened ☐ Closed ☐ Opened		☐ Running ☐ Stopped ☐ Running ☐ Stopped
	Comments:					

Final Analysis	Returned to Service: ☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required: ☐ Yes ☐ No	
	Repair / Replacement Required: ☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

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		COMMISSIONING FORM CUSTOMER SERVICE TERMINATION END		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

CSTE Location & Data	CSTE Downstream Load:		Equipment No.		Location:	
	Drawings:	Single Line:		Grounding:		Site Plan:
		Manufacturer:		Model:		Serial #:
		Mounting Type: ☐ Floor ☐ Wall		Metering Type: ☐ CTs & PTs w/ Meter ☐ Meter Only		Remote Enclosure: ☐ Yes ☐ No
	Rated Current: A		Rated Voltage: VAC		Phases: ☐ 1-Ph ☐ 3-Ph	Short-Circuit Rating kAIC
	Main Disconnect Type:	☐ Breaker		Frame: A	Inst. Setting: A	Manufacturer:
☐ Switch		Trip: A	Model:			
☐ N/A						

Service Size & CSTE Cabling	Service Size: kVA	Voltage: VAC	Rated Service Current: A	Service Transformer: ☐ Pole ☐ Padmount
	Phases: ☐ 1Ø ☐ 3Ø			
	CSTE Load Side Cabling Size and Type: (ie 2 x 4C, 350 kcmil Teck90)		CSTE Load Side Cabling: ☐ Bottom ☐ Side / Rear	CSTE Downstream Load:
CSTE Load Side Cable Rating: Table		A (CEC C22.1)		CSTE Ground Cable Size & Type:
Diagram:		Detail:		

Visual Inspection / Cleaning	CSTE Lamacoid Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No	
	Power Cables Labelled at Both Ends: ☐ Yes ☐ No		Phases Labelled Inside Enclosure: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Power Cable Connections: ☐ Good ☐ Acceptable ☐ Poor	
	Main Disconnect: ☐ Good ☐ Acceptable ☐ Poor		Service Entrance Enclosure: ☐ Good ☐ Acceptable ☐ Poor	
	Ground Connections: ☐ Good ☐ Acceptable ☐ Poor		Bus Bars and Insulators: ☐ Good ☐ Acceptable ☐ Poor	
	Door Mechanical: ☐ Good ☐ Acceptable ☐ Poor		Exercised Circuit Breaker / Disconnect: ☐ Yes ☐ No	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

Resistance Measurements	Test	Resistance			Test Summary ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed
		Phase A	Phase B	Phase C	
	Interior Bus Bar / Cabling	μΩ	μΩ	μΩ	
	Breaker / Disconnect	μΩ	μΩ	μΩ	
Comments:					

		COMMISSIONING FORM CUSTOMER SERVICE TERMINATION END		Page 2 of 2
				Equipment Tag:
Project	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

Insulation Resistance Test	Test Preparation: Setup: Source: ☐ Isolated Contactor: ☐ Open	Cable Destination / Load: ☐ Disconnected ☐ Connected with Load ☐ Isolated		Note: Approval of City's Representative is required, prior to leaving cables connected during the test.		
	WARNING: DISCONNECT ALL POWER CABLES FROM VFD MODULE AND CAPACITORS, AND DISCONNECT ALL CONTROL POWER FUSES PRIOR TO TEST.					
	<i>Test</i>	<i>Voltage</i>	<i>Insulation Resistance</i>			Ground all phases not under test!
			<i>Phase A</i>	<i>Phase B</i>	<i>Phase C</i>	
	Interior Bus Bar / Cabling to Ground	1000 VDC	MΩ	MΩ	MΩ	Test Summary ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed
	Main Disconnect Line to Ground	1000 VDC	MΩ	MΩ	MΩ	
	Main Disconnect Load to Ground	1000 VDC	MΩ	MΩ	MΩ	
	Main Disconnect Line to Load	1000 VDC	MΩ	MΩ	MΩ	
Comments:						

Breaker Settings	Adjust Settings to Match Single Line Diagram	Comments:
	Settings Applied to Breaker: ☐ Yes ☐ No	
	Single Line Diagram:	

Final Analysis	Returned to Service: ☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required: ☐ Yes ☐ No	
	Repair / Replacement Required: ☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

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		COMMISSIONING FORM DISCONNECT SWITCH		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

Disconnect Location & Data	Disconnect Equipment No.		Location:		Fed From:		
	Drawings:	Single Line:		Schematic:		Connection:	
		Manufacturer:		Model:		Serial #:	
	Disconnect Ratings:	Ampacity:	A	Rated Voltage:	VAC	No. of Poles:	Auxiliary Contacts: ☐ Yes ☐ No
		Withstand:	kAIC				
Fuse Ratings:	☐ Installed ☐ N/A		Rating:	A	Type:	Manufacturer: Model:	

Visual Inspection / Cleaning	Disconnect Lamacoid Installed:		☐ Yes ☐ No	Visual Signs of Overheating:		☐ Yes ☐ No
	Power Cables Labelled:		☐ Yes ☐ No	Any Exposed Energized Metal:		☐ Yes ☐ No
	Rated for Hazardous Location:		☐ Yes ☐ No	All Fuse Sizes Match Drawings:		☐ Yes ☐ No
	Cleanliness:		☐ Good ☐ Acceptable ☐ Poor	Enclosure Cover Secured:		☐ Good ☐ Acceptable ☐ Poor
	Switchblade Mechanical:		☐ Good ☐ Acceptable ☐ Poor	Ground Connection:		☐ Good ☐ Acceptable ☐ Poor
	Exercised Switchblade Operation:		☐ Yes ☐ No ☐ N/A	Auxiliary Contacts Change State:		☐ Yes ☐ No
	Cables Supported Appropriately:		☐ Yes ☐ No	Equipment Cleaned:		☐ Yes ☐ No
	Photograph Taken:		☐ Yes ☐ No			
	Comments:					

Switchblade & Fuse Measurements	Test	Resistance			Test Summary
		Phase A	Phase B	Phase C	
	Switchblade Pole Measurements	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	☐ Test Passed
	Fuse Measurements	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	☐ Further Investigation Required.
	☐ Test Failed Comments:				

Insulation Resistance Test	Test Preparation:	Source: ☐ Disconnected ☐ Connected with Source Isolated	Load: ☐ Disconnected ☐ Connected with Load Isolated	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.		
	WARNING: Isolate Source and Load Cabling Prior To Test. Use 500 VDC for < 300 V rated and 1000 VDC for > 300 V rated.					
	Test	Voltage	Insulation Resistance			Ground all phases not under test!
			Phase A	Phase B	Phase C	
	Disconnect Line Side to Ground	VDC	M Ω	M Ω	M Ω	Test Summary ☐ Test Passed ☐ Further Investigation Required. ☐ Test Failed
	Disconnect Load Side to Ground	VDC	M Ω	M Ω	M Ω	
	Disconnect Line to Load	VDC	M Ω	M Ω	M Ω	
Comments:						

		COMMISSIONING FORM DISCONNECT SWITCH		Page 2 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Final Analysis	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

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		COMMISSIONING FORM DRY TYPE TRANSFORMER		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

Transformer Location & Data	Transformer Equipment No.				Location:				Single Line Dwg:				
	Transformer Ratings:	Manufacturer:				CAT / Model No.				Serial #:			
		Primary: V		Secondary Voltage: V		Rating: kVA		☐ 1-Phase		☐ 3-Phase			
		Primary Winding (3-Ph) ☐ Δ ☐ Y ☐ Y-Gnd		Secondary Winding (3-Ph) ☐ Δ ☐ Y ☐ Y-Gnd		Winding Material: ☐ Aluminum ☐ Copper		Impedance: %Z		Temp. Rise: °C			
	Transformer Taps:	☐ Primary ☐ Secondary ☐ N/A	Tap Setting	1 V	2 V	3 V	4 V	5 V	6 V	Tap Setting On V			

Visual Inspection / Cleaning	Transformer Lamacoid Installed:	☐ Yes	☐ No	Visual Signs of Overheating:	☐ Yes	☐ No	
	Power Cables Labelled:	☐ Yes	☐ No	Any Exposed Energized Metal:	☐ Yes	☐ No	
	Cleanliness:	☐ Good	☐ Acceptable	☐ Poor	Enclosure Secured:	☐ Good ☐ Acceptable ☐ Poor	
	Power Connections:	☐ Good	☐ Acceptable	☐ Poor	Ground Connections:	☐ Good ☐ Acceptable ☐ Poor	
	Transformer Supported Appropriately:	☐ Yes	☐ No	☐ N/A	Neutral Bonded to Ground:	☐ Yes ☐ Yes ☐ N/A	
	Cables Supported Appropriately:	☐ Yes	☐ No	Equipment Cleaned:	☐ Yes	Photograph Taken:	☐ Yes
	Comments:						

Insulation Resistance Test	Test Preparation:	Source: ☐ Disconnected ☐ Connected with Source Isolated		Note: Approval of City's Representative is required, prior to leaving cables connected during the test.		
	WARNING: DISCONNECT INCOMING SOURCE POWER CABLES PRIOR TO TEST.					
	Winding	Voltage	Insulation Resistance			Resistance to be recorded after 60 sec.
			Phase A	Phase B	Phase C	
	Primary to Ground	VDC	MΩ	MΩ	MΩ	Test Summary ☐ Test Passed ☐ Further Investigation Required. ☐ Test Failed
	Secondary to Ground	VDC	MΩ	MΩ	MΩ	
	Primary to Secondary	VDC	MΩ	MΩ	MΩ	
Comments:						

Final Analysis	Returned to Service:	☐ Yes	☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes	☐ No	
	Repair / Replacement Required:	☐ Yes	☐ No	

		COMMISSIONING FORM DRY TYPE TRANSFORMER		Page 2 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

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		COMMISSIONING FORM DUCT HEATER		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

Duct Heater Location & Data	Heater Equipment No.		Heater Location:		Fed From:	
	Drawings:	Single Line:		Mech. Schedule:		Schematic: ☐ N/A
		Manufacturer:		Model:		Serial #:
		Power: kW	Rated Voltage: VAC	Full Load Amps: A	☐ 1-Phase ☐ 3-Phase	
		Flow Rate: L/s	Control Voltage: VAC	Stages:	SCR Controls: to V	

Visual Inspection / Cleaning	Duct Heater Lamacoid Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No	
	Power Cables Labelled: ☐ Yes ☐ No		Appropriate Breaker / Fuse Size Installed: ☐ Yes ☐ No	
	SCR Control Cables Labelled: ☐ Yes ☐ No		SCR Controls Properly Installed: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Heater Properly Installed: ☐ Good ☐ Acceptable ☐ Poor	
	Power Connection: ☐ Good ☐ Acceptable ☐ Poor		SCR Controls Connection: ☐ Good ☐ Acceptable ☐ Poor	
	Ground Connection: ☐ Good ☐ Acceptable ☐ Poor		Ground Connection: ☐ Good ☐ Acceptable ☐ Poor	
	Remote Thermostat Installed: ☐ Yes ☐ No ☐ N/A		Remote Thermostat Cable Labelled ☐ Yes ☐ No ☐ N/A	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

Heater Electrical Testing	Test Preparation:		Setup: Source: ☐ Isolated		Power Cable ☐ Disconnected ☐ Connected		Note: Approval of City's Representative is required, prior to leaving cables connected during the test.	
	WARNING: DISCONNECT ALL FIELD POWER CABLES FROM MOTOR PRIOR TO TEST.							
	Test		Test Voltage		Insulation Resistance			Ground all phases not under test!
					Phase A	Phase B	Phase C	
	Line to Ground		VDC		MΩ		MΩ	MΩ
	Test		Tester		Resistance			Test Summary ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed
					Phases A-B	Phases B-C	Phases C-B	
Heating Element		Fluke Meter		μΩ		μΩ	μΩ	
Comments:								

		COMMISSIONING FORM DUCT HEATER		Page 2 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Operational Testing	TESTING: HEATER TO BE RUN FOR TWO (2) MINUTES UNDER EACH SCR DUTY POINT PRIOR TO RECORDING VALUES. SCR DUTY POINTS FOR 0 – 10 V WOULD BE TESTED AT 0.0 V, 2.5 V, 5.0 V, 7.5 V and 10.0 V.				
	Temperature		Turn On Setpoint: °C	Actual Turn On Setpoint: °C	
	SCR Duty Point	SCR Volts	Duct Heater Measured Current		
			Phase A	Phase B	Phase C
	1	V	A	A	A
	2	V	A	A	A
	3	V	A	A	A
	4	V	A	A	A
	5	V	A	A	A
Comments:					

Final Analysis	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

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		COMMISSIONING FORM EMERGENCY LIGHTING		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

Emergency Lighting Location & Data	Battery Bank Location:		Battery Bank Equipment No.		Panel Feed: Circuit No.		Control Panel No.		Applicable Drawings:	
	Battery Bank:	Manufacturer:			Catalog No.			Serial #:		
		Input Voltage: VAC		Output Voltage: VDC		Wattage: W		Internal Lamp Qty:		
	Remote Fixtures:	Manufacturer:			Catalog No.			Remote Fixtures Qty:		
		Input Voltage: VDC		Input Current: A		Lamp Wattage: W		Fixture Lamp Qty:		
		Installed Locations:								

Visual Inspection / Cleaning	Identification Lamacoids Installed: ☐ Yes ☐ No				Lamps Properly Aimed: ☐ Yes ☐ No			
	Visual Signs of Moisture: ☐ Yes ☐ No				All Lamps Properly Operate: ☐ Yes ☐ No			
	Dry Well Remote Fixtures Moisture Proof Rated: ☐ Yes ☐ No ☐ N/A				Valve Chamber Remote Fixtures Moisture Proof Rated: ☐ Yes ☐ No ☐ N/A			
	Wet Well Remote Fixtures Explosion Proof Rated: ☐ Yes ☐ No ☐ N/A				Comminutor Chamber Remote Fixtures Explosion Proof Rated: ☐ Yes ☐ No ☐ N/A			
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor				Cable Connections: ☐ Good ☐ Acceptable ☐ Poor			
	Ground Connections: ☐ Good ☐ Acceptable ☐ Poor				Connections Properly Sealed: ☐ Good ☐ Acceptable ☐ Poor			
	Cables Supported Appropriately: ☐ Yes ☐ No				Equipment Cleaned: ☐ Yes		Photograph Taken: ☐ Yes	
	Comments:							

Battery Testing	Battery Bank Temperature Before Starting Testing: °C		Battery Bank Temperature After Testing Completed: °C		Test Summary ☐ Test Passed ☐ Test Inconclusive ☐ Further Investigation Required ☐ Test Failed
	Battery Voltage at Start of Testing: V				
	Battery Backup Design Time (from Drawing): minutes minimum				
	Time Until All Emergency Lights Turn Off: minutes				
	Measured Battery Bank Current Draw During Testing: A				
	Time to Fully Recharge Battery After Testing: minutes				
	Comments:				

Operational Testing	Emergency Lights Turn On and Off Automatically in Normal Mode: ☐ Yes ☐ No			Emergency Lights Turn On in Test Mode: ☐ Yes ☐ No		
	Operating Modes	Mode Description		Emergency Lights On		Time For Emergency Lights to Turn On
		Normal Mode – Normal Station Operation		No		N/A
		Normal Mode – Battery Bank Power Supply Failure		☐ Yes ☐ No		sec
		Normal Mode – Individual Normal Lighting Circuits Fail		☐ Yes ☐ No		sec
	Test Mode		☐ Yes ☐ No ☐ N/A		sec	
Comments:						

		COMMISSIONING FORM EMERGENCY LIGHTING		Page 2 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Final Analysis	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

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		COMMISSIONING FORM HVAC CONTROLLER		Page 1 of 3
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

Controller Location & Data	HVAC Controller Location:		Equipment No.		HVAC Control Panel Equip. No. ☐ N/A		
	Drawings:	HVAC P&ID:		Control Panel:		Dampers Loop:	
	Controlled Dampers:	Supply Damper Equipment No. ☐ N/A	Return Damper Equipment No. ☐ N/A	Exhaust Damper Equipment No. ☐ N/A			
	Controlled Heaters:	Heater No. ☐ N/A	Heater No. ☐ N/A	Heater No. ☐ N/A			
	HVAC Controller:	Manufacturer:		Catalog No.		Serial #:	
		Power Rating:	Power Supply: VAC	Current Rating: A	Control Voltage: VAC		
	Control Power Transformer:	Size: VA	Secondary Voltage: V	Primary Fuse: A	Secondary Fuse: A		

Visual Inspection / Cleaning	HVAC Controller Lamacoid Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No		
	Power Cables Labelled at Both Ends: ☐ Yes ☐ No		Control Cables Labelled at Both Ends: ☐ Yes ☐ No		
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Power Cable Connections: ☐ Good ☐ Acceptable ☐ Poor		
	Fully Functioning Controller: ☐ Good ☐ Acceptable ☐ Poor		Controller Properly Mounted: ☐ Good ☐ Acceptable ☐ Poor		
	Controller Fully Programmed: ☐ Good ☐ Acceptable ☐ Poor		All Inputs & Outputs Work: ☐ Good ☐ Acceptable ☐ Poor		
	Cables Supported Appropriately: ☐ Yes ☐ No ☐ N/A		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes	
	Comments:				

Operational Testing	Station Occupied Light Switch Activates High Ventilation Rate: ☐ Yes ☐ No ☐ N/A			Comments:	
	High Outdoor Temperature Activates High Ventilation Rate: ☐ Yes ☐ No ☐ N/A				
	High Gas Detection Activates High Ventilation Rate: ☐ Yes ☐ No ☐ N/A				
	Controller Changes From High Ventilation Rate to Low Ventilation Rate: ☐ Yes ☐ No ☐ N/A				
	Controller Defaults to Low Ventilation Rate: ☐ Yes ☐ No ☐ N/A				
	Able to Change Setpoints by HMI / Buttons: ☐ Yes ☐ No ☐ N/A				
	Operating Modes	Mode Description	Supply Damper Open (0 – 100%)	Return Damper Open (0 – 100%)	Exhaust Damper Open (0 – 100%)
		High Ventilation Rate	% ☐ N/A	% ☐ N/A	% ☐ N/A
Low Ventilation Rate		% ☐ N/A	% ☐ N/A	% ☐ N/A	

Controller Settings	Program HVAC Controller Settings to Match Setting Letter		Comments:
	Settings Applied to Controller: ☐ Yes ☐ No		
	HVAC Controller Setting Letter File:		

	COMMISSIONING FORM HVAC CONTROLLER		Page	2 of 3
			Equipment Tag:	
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Controller Input / Output Signals	Verify Control Signals Between Controller and Field Devices				Comments:		
	Test Preparation: Test physical signals rather than installing jumpers for signals						
	Field Wires Labelled at Both Ends: ☐ Yes ☐ No						
	Discrete 1 Input	Signal Description	State	State Description	Signal Appears on Controller Screen	Modulated 1 Output (0 – 100 %)	Modulated 2 Output (0 – 100 %)
		☐ Not Used	Low (0)		☐ Yes ☐ No ☐ N/A	% ☐ N/A	% ☐ N/A
			High (1)		☐ Yes ☐ No ☐ N/A	% ☐ N/A	% ☐ N/A
	Sensor A Input	Signal Description	Signal Type	Condition Pickup Level	Signal Appears on Controller Screen	Modulated 1 Output (0 – 100 %)	Modulated 2 Output (0 – 100 %)
		☐ Not Used	☐ RTD ☐ PT100 ☐ PT1000 ☐ 4-20 mA	☐ Low ≤ °C	☐ Yes ☐ No ☐ N/A	% ☐ N/A	% ☐ N/A
				☐ High > °C	☐ Yes ☐ No ☐ N/A	% ☐ N/A	% ☐ N/A
	Sensor B Input	Signal Description	Signal Type	Condition Pickup Level	Signal Appears on Controller Screen	Modulated 1 Output (0 – 100 %)	Modulated 2 Output (0 – 100 %)
		☐ Not Used	☐ RTD ☐ PT100 ☐ PT1000	☐ Low ≤ °C	☐ Yes ☐ No ☐ N/A	% ☐ N/A	% ☐ N/A
				☐ High > °C	☐ Yes ☐ No ☐ N/A	% ☐ N/A	% ☐ N/A
	Relay 1 Output	Signal Description	Output Goes To	Output Changes Based on Signal Input	Output State Level	State Description	Signal Appears on Controller Screen
		☐ Not Used		☐ Discrete Input 1 ☐ Sensor A ☐ Sensor B	Low (0)		☐ Yes ☐ No ☐ N/A
					High (1)		☐ Yes ☐ No ☐ N/A
Relay 2 Output	Signal Description	Output Goes To	Output Changes Based on Signal Input	Output State Level	State Description	Signal Appears on Controller Screen	
	☐ Not Used		☐ Discrete Input 1 ☐ Sensor A ☐ Sensor B	Low (0)		☐ Yes ☐ No ☐ N/A	
				High (1)		☐ Yes ☐ No ☐ N/A	
Modulated 1 Output	Output Goes to Field Devices	Output Signal	Output Changes Based on Signal Input	Output State Level	Signal Appears on Controller Screen	Measured Output (V / mA)	
	☐ Heater SCR ☐ Supply Damper ☐ Return Damper ☐ Exhaust Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ 4–20mA	☐ Discrete Input 1 ☐ Sensor A ☐ Sensor B	Low	☐ Yes ☐ No ☐ N/A	V / mA	
				High	☐ Yes ☐ No ☐ N/A	V / mA	
Modulated 2 Output	Output Goes to Field Devices	Output Signal	Output Changes Based on Signal Input	Output State Level	Signal Appears on Controller Screen	Measured Output (V / mA)	
	☐ Heater SCR ☐ Supply Damper ☐ Return Damper ☐ Exhaust Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ 4–20mA	☐ Discrete Input 1 ☐ Sensor A ☐ Sensor B	Low	☐ Yes ☐ No ☐ N/A	V / mA	
				High	☐ Yes ☐ No ☐ N/A	V / mA	

		COMMISSIONING FORM HVAC CONTROLLER		Page 3 of 3
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Final Analysis	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

		COMMISSIONING FORM HVAC DAMPERS		Page 1 of 3 Equipment Tag:
Project	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

Project Contact	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Damper Actuators Location & Data	Station Ventilation Room(s) / Area(s)		HVAC Controller Equipment No.	HVAC Control Panel Equip. No. ☐ N/A
	Drawings:	HVAC P&ID:	Control Panel:	Dampers Loop:
	Supply Damper Actuator:	Room Installed:	Equipment No.	Control Type: ☐ Modulating ☐ On / Off
		Manufacturer:	Catalog No.	Serial #:
		Power Supply: VAC / VDC	Torque: Nm	Runtime: sec.
		Control Input: VAC / VDC	Control Output: VAC / VDC	Auxiliary Switch Provided: ☐ Yes ☐ No
	Return Damper Actuator:	Room Installed:	Equipment No.	Type: ☐ Modulating ☐ On/Off
		Manufacturer:	Catalog No.	Serial #:
		Power Supply: VAC / VDC	Torque: Nm	Runtime: sec.
		Control Input: VAC / VDC	Control Output: VAC / VDC	Auxiliary Switch Provided: ☐ Yes ☐ No
	Exhaust Damper Actuator:	Room Installed:	Equipment No.	Type: ☐ Modulating ☐ On/Off
		Manufacturer:	Catalog No.	Serial #:
		Power Supply: VAC / VDC	Torque: Nm	Runtime: sec.
		Control Input: VAC / VDC	Control Output: VAC / VDC	Auxiliary Switch Provided: ☐ Yes ☐ No

Visual Inspection / Cleaning	HVAC Damper Lamacoids Installed: ☐ Yes ☐ No	HVAC Damper Actuator Lamacoids Installed: ☐ Yes ☐ No
	Power Cables Labelled at Both Ends: ☐ Yes ☐ No	Control Cables Labelled at Both Ends: ☐ Yes ☐ No
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor	Power Cable Connections: ☐ Good ☐ Acceptable ☐ Poor
	Fully Functioning Actuators: ☐ Good ☐ Acceptable ☐ Poor	Actuators Properly Installed: ☐ Good ☐ Acceptable ☐ Poor
	All Actuator Inputs Work: ☐ Good ☐ Acceptable ☐ Poor	All Actuator Outputs Work: ☐ Good ☐ Acceptable ☐ Poor
	Cables Supported Appropriately: ☐ Yes ☐ No ☐ N/A	Equipment Cleaned: ☐ Yes Photographs Taken: ☐ Yes
	Comments:	

Operational Testing	Supply Actuator Measured Opening Time: sec	Supply Actuator Measured Closing Time: sec			
	Return Actuator Measured Opening Time: sec	Return Actuator Measured Closing Time: sec			
	Exhaust Actuator Measured Opening Time: sec	Exhaust Actuator Measured Closing Time: sec			
	Supply Damper Changes From Low Ventilation to High Ventilation: ☐ Yes ☐ No	Supply Damper Changes From High Ventilation to Low Ventilation: ☐ Yes ☐ No			
	Return Damper Changes From Low Ventilation to High Ventilation: ☐ Yes ☐ No	Return Damper Changes From High Ventilation to Low Ventilation: ☐ Yes ☐ No			
	Exhaust Damper Changes From Low Ventilation to High Ventilation: ☐ Yes ☐ No	Exhaust Damper Changes From High Ventilation to Low Ventilation: ☐ Yes ☐ No			
	Operating Modes	<i>Mode Description</i>	<i>Fail-Safe Position</i>	<i>Low Ventilation Rate</i>	<i>High Ventilation Rate</i>
		Supply Damper Open Position	☐ Opened ☐ Closed	%	%
		Return Damper Open Position	☐ Opened ☐ Closed	%	%
		Exhaust Damper Open Position	☐ Opened ☐ Closed	%	%
Comments:					

		COMMISSIONING FORM HVAC DAMPERS		Page 2 of 3
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Dampers Actuator Settings	Adjust Damper Actuator Settings for Damper Balancing		Comments:	
	Damper Settings Applied to: ☐ Supply Damper ☐ Return Damper ☐ Exhaust Damper			
	Supply Damper Actuator	Direction Control ☐ CCW ☐ CCW	Angle of Rotation Positions Starting: Ending:	Auxiliary Switch Position ☐ Not Used
	Return Damper Actuator	Direction Control ☐ CCW ☐ CCW	Angle of Rotation Positions Starting: Ending:	Auxiliary Switch Position ☐ Not Used
	Exhaust Damper Actuator	Direction Control ☐ CCW ☐ CCW	Angle of Rotation Positions Starting: Ending:	Auxiliary Switch Position ☐ Not Used

Actuator Input / Output Control Signals	Verify Control Signals Between HVAC Controller and Dampers					Comments:		
	Test Preparation: Test physical signals rather than installing jumpers for signals							
	Field Wires Labelled at Both Ends: ☐ Yes ☐ No							
	Low Ventilation Rate	Actuator	Signal Type	Measured Input Voltage	Measured Output Voltage	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
		Supply Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Return Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Exhaust Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	High Ventilation Rate	Actuator	Signal Type	Measured Input Voltage	Measured Output Voltage	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
		Supply Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Return Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Exhaust Damper ☐ Not Used		☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	

Final Analysis	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

		COMMISSIONING FORM HVAC DAMPERS		Page 3 of 3
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

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		COMMISSIONING FORM HVAC FANS & STARTERS		Page 1 of 3
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

Starter Location & Data	Starter Downstream Load:		Starter Location:		Section No. ☐ N/A	
	Drawings:	Single Line:		Schematic:		Connection:
	Contactor Ratings:	Manufacturer:		Model:		Serial #:
		Power Rating:		Rated Voltage: VAC	Current Rating: A	Control Voltage: VAC
	Circuit Protection:	☐ Breaker ☐ Fuse	Rating: A	Inst. Setting: A	Manufacturer: Model:	
	Exhaust Contactor:	Type: ☐ NEMA ☐ IEC ☐ N/A	Manufacturer:		Model:	
			NEMA Size: ☐ N/A		IEC Rating: A ☐ AC-3 ☐ AC-4	
	Supply Contactor:	Type: ☐ NEMA ☐ IEC ☐ N/A	Manufacturer:		Model:	
			NEMA Size: ☐ N/A		IEC Rating: ☐ AC-3 ☐ AC-4	
	Overload Protection:	☐ Thermal ☐ Electronic ☐ Not Applicable	Class: ☐ 10 ☐ 20 ☐ 30 ☐ Unknown	Setting / Rating: A	Manufacturer:	
Model:						
Current Transformer:	Ratio:		Type:			
Control Power Transformer:	Size: VA	Secondary Voltage: V	Primary Fuse: A	Secondary Fuse: A		

Exhaust Fan Data	Equipment Tag:		Power: kW / HP		Voltage: VAC	
	Full Load Amps: A	Service Factor:	Inverter Duty Rated: ☐ Yes ☐ No		Insulation Class:	

Supply Fan Data	Equipment Tag:		Power: kW / HP		Voltage: VAC	
	Full Load Amps: A	Service Factor:	Inverter Duty Rated: ☐ Yes ☐ No		Insulation Class:	

Visual Inspection / Cleaning	Fan Lamacoid(s) Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No	
	Power Cables Labelled at Both Ends: ☐ Yes ☐ No		Control Cables Labelled at Both Ends: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Power Cable Connections: ☐ Good ☐ Acceptable ☐ Poor	
	Control Cable Connections: ☐ Good ☐ Acceptable ☐ Poor		Elec / Mech Interlocks: ☐ Good ☐ Acceptable ☐ Poor	
	Door Mechanical: ☐ Good ☐ Acceptable ☐ Poor		Contactor Alignment: ☐ Good ☐ Acceptable ☐ Poor	
	Door Mechanical: ☐ Good ☐ Acceptable ☐ Poor		Contact Alignment: ☐ Good ☐ Acceptable ☐ Poor	
	Verify O/L element are correctly sized for the loads: ☐ Yes ☐ No ☐ N/A		Exercised Circuit Breaker / Disconnect: ☐ Yes ☐ No	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
Comments:				

	COMMISSIONING FORM HVAC FANS & STARTERS		Page	2 of 3
			Equipment Tag:	
Project	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

Contact / Pole Measurements	Test	Resistance			Test Summary ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed
		Phase A	Phase B	Phase C	
	Exhaust Fan Contactor Contact	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	
	Supply Fan Contactor Contact	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	
	Breaker / Disconnect	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	
Comments:					

Insulation Resistance Test	Test Preparation:		Setup: Source: ☐ Isolated Contactor: ☐ Open		Cable Destination / Load: ☐ Disconnected ☐ Connected with Load Isolated		Note: Approval of City's Representative is required, prior to leaving cables connected during the test.		
	WARNING: DISCONNECT ALL POWER CABLES FROM CONTACTORS AND DISCONNECT ALL CONTROL POWER FUSES PRIOR TO TEST.								
	Test	Voltage	Insulation Resistance			Ground all phases not under test!	Test Summary ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed		
			Phase A	Phase B	Phase C				
	Exhaust Contactor Line to Ground	1000 VDC	M Ω	M Ω	M Ω				
	Exhaust Contactor Load to Ground	1000 VDC	M Ω	M Ω	M Ω				
	Exhaust Contactor Line to Load	1000 VDC	M Ω	M Ω	M Ω				
	Supply Contactor Line to Ground	1000 VDC	M Ω	M Ω	M Ω				
	Supply Contactor Load to Ground	1000 VDC	M Ω	M Ω	M Ω				
	Supply Contactor Line to Load	1000 VDC	M Ω	M Ω	M Ω				
Comments:									

Starter & PLC Control Signals	Verify Control Signals Between Starter and PLC				Comments:									
	Test Preparation: Test physical signals rather than installing jumpers for signals													
	Field Wires Labelled at Both Ends: ☐ Yes ☐ No													
	Supply Fan Signals	Signal Description	Pilot Light Illuminates			Signal Received at PLC Card			Signal Appears on HMI Screen			SCADA Can See Signal		
		Manual Mode	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A
		Auto Mode	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A
		Run	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A
		Overload / Fault	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A
	Exhaust Fan Signals	Signal Description	Pilot Light Illuminates			Signal Received at PLC Card			Signal Appears on HMI Screen			SCADA Can See Signal		
Manual Mode		☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	
Auto Mode		☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	
Run		☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	
Overload / Fault		☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	

		COMMISSIONING FORM HVAC FANS & STARTERS		Page 3 of 3
		Equipment Tag:		
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Operational Testing	Exhaust Fan Measured Current		Phase A	A	Phase B	A	Phase C	A	
	Supply Fan Measured Current		Phase A	A	Phase B	A	Phase C	A	
	Operating Modes	<i>Mode Description</i>				<i>Run Start & Stop</i>		<i>Overload Disables Run</i>	
		Manual Mode				☐ Yes	☐ No	☐ N/A	☐ Yes ☐ No ☐ N/A
		Automatic Mode				☐ Yes	☐ No	☐ N/A	☐ Yes ☐ No ☐ N/A
	Comments:								

Final Analysis	Returned to Service:		☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:		☐ Yes ☐ No	
	Repair / Replacement Required:		☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

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		COMMISSIONING FORM INSTRUMENT SWITCH		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

Instrument Data	Drawings:	P&ID:	Control Panel:	Loop Diagram:
	Instrument:	Room Installed:	Equipment No.	Instrument Signal: ☐ Flow ☐ Level ☐ Pressure ☐ Temperature
		Manufacturer:	Catalog No.	Serial #:
		Power Supply: VAC / VDC	Loop Powered ☐ Yes ☐ No	Output Contacts Rated: VAC / VDC

Visual Inspection / Cleaning	Instrument Lamacoid Installed: ☐ Yes ☐ No		Instrument Properly Mounted: ☐ Yes ☐ No	
	Power Cables Labelled at Both Ends: ☐ Yes ☐ No		Control Cables Labelled at Both Ends: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor	Wiring Matches Loop Diagram: ☐ Good ☐ Acceptable ☐ Poor		
	Fully Functioning Instrument: ☐ Good ☐ Acceptable ☐ Poor	Fully Functioning Output Signal(s): ☐ Good ☐ Acceptable ☐ Poor		
	Instrument Display Works Properly: ☐ Yes ☐ No ☐ N/A		Equipment Cleaned: ☐ Yes	Photographs Taken: ☐ Yes
	Comments:			

Instrument Operational Testing	Test instrument for normal analog reading level along with alarm level condition. Operational testing should be done as follows: 1. For flow switch, test switch under normal operation along with low / high flow 2. For level float switch, turn float switch sideways 3. For pressure switch, test switch under normal operation along with low / high pressure 4. For temperature switch, test switch under normal operation along with low / high temperature Example Record Measured Value for Normal and Alarm Operation Low Flow Switch - Instrument Normal Operation Measured Value 5 L/s, Instrument Alarm Operation Measured Value 1 L/s. Low Pressure Switch - Instrument Normal Operation Measured Value 60 psi, Instrument Alarm Operation Measured Value 30 psi High Temperature Switch - Instrument Normal Operation Measured Value 20°C, Instrument Alarm Operation Measured Value 50°C.						
	Outputs Match Instrument Readings: ☐ Yes ☐ No			Display Reflects Instrument Readings (if applicable): ☐ Yes ☐ No			
	Alarm Condition Visually Appears on Display (if applicable) ☐ Yes ☐ No			Alarm Condition Annunciates from Instrument (if applicable) ☐ Yes ☐ No			
	Alarm Outputs Automatically Reset Once Alarm Levels Clear (if applicable): ☐ Yes ☐ No			Alarm Output Contacts Change State When Alarm Levels Reached (if applicable): ☐ Yes ☐ No			
	Operating Modes	Outputs	Mode Description	Output Contact State		Measured Value (include units)	Instrument Display (include units)
		Output 1	Instrument Normal Operation	☐ Opened	☐ Closed	☐ N/A	☐ N/A
			Instrument Alarm Operation	☐ Opened	☐ Closed	☐ N/A	☐ N/A
		Output 2	Instrument Normal Operation	☐ Opened	☐ Closed	☐ N/A	☐ N/A
	☐ N/A	Instrument Alarm Operation	☐ Opened	☐ Closed	☐ N/A	☐ N/A	
	Comments:						

		COMMISSIONING FORM INSTRUMENT SWITCH		Page 2 of 2 Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Instrument Output Control Signals	Verify Control Signals Between Instrument and Control Panel				Comments:		
	Test Preparation: Test physical signals rather than installing jumpers for signals						
	Field Wires Labelled at Both Ends: ☐ Yes ☐ No						
	Discrete Output 1	Signal Description	State	Description	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
			0		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
			1		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Discrete Output 2	Signal Description	State	Description	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
			0		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
			☐ N/A	1		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Final Analysis	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

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		COMMISSIONING FORM INSTRUMENT TRANSMITTER (CONTROLLER)		Page 1 of 3
				Equipment Tag:
Project	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

Project Contact	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Instrument Data	Drawings:	P&ID:	Control Panel:	Loop Diagram:
	Instrument:	Room Installed:	Equipment No.	Output Signal: ☐ 4 – 20 mA ☐ 0 – 10V
		Manufacturer:	Catalog No.	Serial #:
		Power Supply: VAC / VDC	Loop Powered ☐ Yes ☐ No	Auxiliary Contacts Provided: ☐ Yes ☐ No

Visual Inspection / Cleaning	Instrument Lamacoid Installed:	☐ Yes ☐ No	Instrument Properly Mounted:	☐ Yes ☐ No
	Power Cables Labelled at Both Ends:	☐ Yes ☐ No	Control Cables Labelled at Both Ends:	☐ Yes ☐ No
	Cleanliness:	☐ Good ☐ Acceptable ☐ Poor	Wiring Matches Loop Diagram:	☐ Good ☐ Acceptable ☐ Poor
	Fully Functioning Instrument:	☐ Good ☐ Acceptable ☐ Poor	Fully Functioning Output Signal(s):	☐ Good ☐ Acceptable ☐ Poor
	Instrument Display Works Properly:	☐ Yes ☐ No ☐ N/A	Equipment Cleaned:	☐ Yes ☐ No
	Comments:			

Instrument Operational Testing	Test instrument for normal analog reading level along with alarm level condition.					
	Operational testing should be done as follows:					
	- For flow detection, use a multimeter to simulate - For gas detection, use a gas calibration kit to simulate signal for flow alarm level - For level detection, use a physical level and/or simulated signal for level alarm level. - For pressure detection, use a multimeter to simulate signal for pressure alarm level. - For temperature detection, use a heat gun and/or multimeter for temperature alarm level. - For vibration detection, use a multimeter to simulate signal for vibration alarm level.					
	Analog Outputs Match Instrument Readings:		☐ Yes ☐ No	Display Reflects Instrument Readings (if applicable):		
	Alarm Condition Visually Appears on Display (if applicable)		☐ Yes ☐ No	Alarm Condition Annunciates from Instrument (if applicable)		
	Alarm Outputs Automatically Reset Once Alarm Levels Clear (if applicable):		☐ Yes ☐ No	Alarm Output Contacts Change State When Alarm Levels Reached (if applicable):		
	Operating Modes	Sensor	Mode Description	Alarm Output Contact State	Measured Analog Output Signal	Instrument Display (include units)
		Sensor 1	Instrument Normal Level Operation	☐ Opened ☐ Closed ☐ N/A	☐ mA ☐ V	☐ N/A
			Instrument Alarm Level Operation	☐ Opened ☐ Closed ☐ N/A	☐ mA ☐ V	☐ N/A
		Sensor 2 ☐ N/A	Instrument Normal Level Operation	☐ Opened ☐ Closed ☐ N/A	☐ mA ☐ V	☐ N/A
Instrument Alarm Level Operation	☐ Opened ☐ Closed ☐ N/A		☐ mA ☐ V	☐ N/A		
Comments:						

		COMMISSIONING FORM INSTRUMENT TRANSMITTER (CONTROLLER)		Page 2 of 3
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Instrument Output Control Signals	Verify Control Signals Between Instrument and Control Panel				Comments:		
	Test Preparation: Test physical signals rather than installing jumpers for signals						
	Field Wires Labelled at Both Ends: ☐ Yes ☐ No						
	Analog Output Signal 1	Signal Type (Flow, Gas Reading, Level, Pressure, Temperature, Vibration, etc.)	Transmitter Display (include units)	Measured Output Signal	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
			☐ N/A	☐ mA ☐ V	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Analog Output Signal 2	Signal Type (Flow, Gas Reading, Level, Pressure, Temperature, Vibration, etc.)	Transmitter Display (include units)	Measured Output Signal	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
		☐ N/A	☐ N/A	☐ mA ☐ V	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Discrete Output 1	Signal Description	State	Description	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
		☐ N/A	0		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
			1		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Discrete Output 2	Signal Description	State	Description	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
		☐ N/A	0		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
			1		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Discrete Output 3	Signal Description	State	Description	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
		☐ N/A	0		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
1				☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	
Discrete Output 4	Signal Description	State	Description	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal	
	☐ N/A	0		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	
		1		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	

Final Analysis	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

		COMMISSIONING FORM INSTRUMENT TRANSMITTER (CONTROLLER)		Page 3 of 3
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

		COMMISSIONING FORM LIFT PUMP		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

Lift Pump Location & Data	Drawings:	Single Line:		Schematic:		Connection:		
	Motor:	Equipment No.		Location:		Enclosure Type: ☐ ODP ☐ TEFC		
		Manufacturer:		Model:		Serial No.		
		Power:	HP	Voltage:	VAC	☐ 1Ø ☐ 3Ø	Full Load Amps:	A
		Speed:	RPM	Service Factor:	Efficiency:		Power Factor:	
		Inverter Duty Rated:	☐ No ☐ Yes	Insulation Class:	Ambient Temp. °C		Weight: lbs	
	Pump:	Equipment No.		Location:		Mech. Seal: ☐ Single ☐ Double		
		Manufacturer:		Model:		Serial No.		
		Impeller Size:	mm	Driver Power:	kW	Flow:	L/s @ TDH m	Speed:

Visual Inspection / Cleaning	Motor Lamacoid Installed:	☐ Yes ☐ No	Pump Lamacoid Installed:	☐ Yes ☐ No		
	Drive Shaft Connected:	☐ Yes ☐ No	Visual Signs of Overheating:	☐ Yes ☐ No		
	Motor Power Cables Labelled:	☐ Yes ☐ No	Motor Control Cables Labelled:	☐ Yes ☐ No		
	Motor Operation:	☐ Good ☐ Acceptable ☐ Poor	Pump Operation:	☐ Good ☐ Acceptable ☐ Poor		
	Motor Mounting Installation:	☐ Good ☐ Acceptable ☐ Poor	Pump Mounting Installation:	☐ Good ☐ Acceptable ☐ Poor		
	Cleanliness:	☐ Good ☐ Acceptable ☐ Poor	Power Cable Connections:	☐ Good ☐ Acceptable ☐ Poor		
	Control Cable Connections:	☐ Good ☐ Acceptable ☐ Poor	Ground Connections:	☐ Good ☐ Acceptable ☐ Poor		
	Paint	☐ Good ☐ Acceptable ☐ Poor	Mechanical Noise / Vibrations	☐ Good ☐ Acceptable ☐ Poor		
	Seal Water Automatically Turns On:	☐ Yes ☐ No ☐ N/A	Seal Water Automatically Turns Off:	☐ Yes ☐ No ☐ N/A		
	Cables Supported Appropriately:	☐ Yes ☐ No	Equipment Cleaned:	☐ Yes	Photographs Taken:	☐ Yes
	Comments:					

Motor Electrical Testing	Test Preparation:	Setup: ☐ Isolated	Power Cable ☐ Disconnected ☐ Connected	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.		
	WARNING: DISCONNECT ALL FIELD POWER CABLES FROM MOTOR PRIOR TO TEST.					
	<i>Test</i>	<i>Test Voltage</i>	<i>Insulation Resistance</i>			Ground all phases not under test!
			<i>Phase A</i>	<i>Phase B</i>	<i>Phase C</i>	
	Line to Ground	VDC	MΩ	MΩ	MΩ	Test Summary ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed
	<i>Test</i>	<i>Tester</i>	<i>Resistance</i>			
			<i>Phases A-B</i>	<i>Phases B-C</i>	<i>Phases C-B</i>	
	Winding Resistance	Fluke Meter	μΩ	μΩ	μΩ	
Comments:						

		COMMISSIONING FORM LIFT PUMP		Page 2 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Full Load Operational Testing	TESTING: MOTOR AND PUMP TO BE RUN FOR FIVE (5) MINUTES UNDER FULL LOAD PRIOR TO RECORDING VALUES.						
	Bearing Temperature ☐ N/A		Recommended Alarm Level: °C		Recommended Lockout Level: °C		
	Bearing Vibration ☐ N/A		Recommended Alarm Level: mm/s		Recommended Lockout Level: mm/s		
	Motor Winding Temperature ☐ N/A		Recommended Alarm Level: °C		Recommended Lockout Level: °C		
	Motor Measured Current:		Phase A A	Phase B A	Phase C A		
	Starter Displayed Current:		Phase A A	Phase B A	Phase C A		
	Bearing Monitoring	Bearing Description	Monitoring Signal	Measured Value	Calculated Value	PLC / HMI Displayed Value	
		Motor Drive End (Upper)	Temperature ☐ N/A	Ω	°C	°C	
			Vibration ☐ N/A	mA	mm/s	mm/s	
		Motor Drive End (Lower)	Temperature ☐ N/A	Ω	°C	°C	
			Vibration ☐ N/A	mA	mm/s	mm/s	
	Pump Drive End (Upper)	Temperature ☐ N/A	Ω	°C	°C		
	Motor Winding	Motor Winding Description	Monitoring Signal	Measured Value	Calculated Value	Alarm Contact to PLC Initiated	
		Phase A	Temperature ☐ N/A	Ω	°C	☐ Yes ☐ No ☐ N/A	
		Phase B	Temperature ☐ N/A	Ω	°C	☐ Yes ☐ No ☐ N/A	
Phase C		Temperature ☐ N/A	Ω	°C	☐ Yes ☐ No ☐ N/A		
Seal Water	Seal Water Instrument	Motor Status	Instrument Output Status		Output Received at Seal / PLC		
	Solenoid ☐ N/A	Running	☐ Closed	☐ Opened	☐ Yes ☐ No ☐ N/A		
		Stopped	☐ Closed	☐ Opened	☐ Yes ☐ No ☐ N/A		
Flow Switch ☐ N/A	Running	☐ Closed	☐ Opened	☐ Yes ☐ No ☐ N/A			
	Stopped	☐ Closed	☐ Opened	☐ Yes ☐ No ☐ N/A			
Comments:							

Final Analysis	Returned to Service: ☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required: ☐ Yes ☐ No	
	Repair / Replacement Required: ☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative	City of Winnipeg			
☐ Not Witnessed				

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		COMMISSIONING FORM MOTOR CONTROL CENTRE		Page 1 of 4
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

MCC Location & Data	MCC Equipment No.		MCC Location:		No. of Sections		
	Drawings:	Single Line:		Elevation:		Three-Line:	
	MCC:	Manufacturer:		Model:		Serial #:	
		Rated Voltage: VAC		Vertical Bus Current Rating: A		Horizontal Bus Current Rating: A	
		Service Entrance Rated: ☐ No ☐ Yes		Neutral Bus: ☐ No ☐ Yes		Cabling Entry ☐ Bottom ☐ Top	
		Withstand Rating: kAIC		Control Voltage: VAC		No. of Wires: ☐ 3W ☐ 4W	
	Main Circuit Feed Protection:	☐ Breaker	Frame Size: A	Withstand Rating: kAIC	Manufacturer:		
		☐ Fuse	Trip Size: A		Model:		
	Alternate Circuit Feed Protection:	☐ Breaker	Frame Size: A	Withstand Rating: kAIC	Manufacturer:		
		☐ Fuse	Trip Size: A		Model:		
	Power Meter	☐ Installed	Metering Type:	☐ 1Ø ☐ 3Ø	Manufacturer:		
		☐ N/A			Model:		
	Current Transformer Ratio: : A		Metering Voltage: VAC		Power Supply Voltage: VAC		
	Transient Voltage Surge Suppressor	☐ Installed	Rating: kA	☐ 1Ø ☐ 3Ø	Manufacturer:		
☐ N/A		MCOV: VAC		Model:			
Power Failure Relays:	☐ Installed	MCC Bus: VAC	☐ 1Ø ☐ 3Ø	Manufacturer:			
	☐ N/A	Uty Power: VAC	☐ 1Ø ☐ 3Ø	Model:			
Instrument No.							

Visual Inspection / Cleaning	MCC Lamacoid Installed: ☐ Yes ☐ No		All Pilot Device Lamacoids Installed: ☐ Yes ☐ No	
	Visual Signs of Moisture: ☐ Yes ☐ No		Visual Signs of Overheating / Corona: ☐ Yes ☐ No	
	Power Cables Labelled at Both Ends: ☐ Yes ☐ No		Control Cables Labelled at Both Ends: ☐ Yes ☐ No	
	Circuit Breakers Match Drawings: ☐ Yes ☐ No		Power/Control Fuses Match Drawings: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Power Cable Connections: ☐ Good ☐ Acceptable ☐ Poor	
	Control Cable Connections: ☐ Good ☐ Acceptable ☐ Poor		Elect./ Mech. Interlocks: ☐ Good ☐ Acceptable ☐ Poor	
	Ground Connections: ☐ Good ☐ Acceptable ☐ Poor		Vents / Filter Conditions: ☐ Good ☐ Acceptable ☐ Poor	
	Door Mechanical: ☐ Good ☐ Acceptable ☐ Poor		All Instruments Work: ☐ Good ☐ Acceptable ☐ Poor	
	Required Clearances Met: ☐ Good ☐ Acceptable ☐ Poor		All Buckets Securely Closed: ☐ Good ☐ Acceptable ☐ Poor	
	All Terminal Blocks Properly Labelled: ☐ Yes ☐ No ☐ N/A		Exercised All Breakers & Disconnects: ☐ Yes ☐ No	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

		COMMISSIONING FORM MOTOR CONTROL CENTRE		Page 2 of 4 Equipment Tag:
Project	Facility:			
	Area:	RFP No.	Tender No.	

Contact / Pole Measurements	Test	Resistance Line-to-Load			Test Summary ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed
		Phase A	Phase B	Phase C	
	Main Breaker ☐ N/A	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	
	Alternate Source Breaker ☐ N/A	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	
	Downstream MCC Feeder Breaker ☐ N/A	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	
	P-L01 Breaker ☐ N/A	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	
	P-L02 Breaker ☐ N/A	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	
	P-L03 Breaker ☐ N/A	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	
	P-L04 Breaker ☐ N/A	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	
	Comments:				

Insulation Resistance Test	Test Preparation:	Source: ☐ Disconnected ☐ Connected with Source Isolated	Cable Destination / Load: ☐ Disconnected ☐ Connected with Load Isolated	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.		
	Test	Voltage	Insulation Resistance			Ground all phases not under test!
			Phase A	Phase B	Phase C	
	MCC Vertical Bus Phase to Ground	1000 VDC	$M\Omega$	$M\Omega$	$M\Omega$	Test Summary ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed
	MCC Vertical Bus Phase to Phase	1000 VDC	$M\Omega$	$M\Omega$	$M\Omega$	
	MCC Horizontal Bus Phase to Ground	1000 VDC	$M\Omega$	$M\Omega$	$M\Omega$	
	MCC Horizontal Bus Phase to Phase	1000 VDC	$M\Omega$	$M\Omega$	$M\Omega$	
	Comments:					

MCC Feeder Buckets	Visual Inspection Requirements: G = Good, A = Acceptable, P = Poor. Comments required for any breakers listed as Poor condition.							
	1. Record all feeder bucket fuses and circuit breakers tying into MCC bus. 2. Confirm identification tag / lamacoid is installed. 3. Look for visual signs of overheating. 4. Inspect and torque connections. 5. Confirm disconnect operation and exercise operation including with circuit breaker. 6. Confirm cables are supported and routed appropriately.							
	Bucket ID	Cell Location	Frame Size	Trip Size	Manufacturer	Model	Visual Inspection	Comments
			A	A				
			A	A				
			A	A				
			A	A				
			A	A				
			A	A				
			A	A				

		COMMISSIONING FORM MOTOR CONTROL CENTRE		Page 3 of 4
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

MCC Device Settings	Adjust MCC Device Settings to Match Single Line and record final values below.				Comments:			
	Settings Applied to MCC Breakers: ☐ Yes ☐ No							
	Settings Applied to MCC Relays: ☐ Yes ☐ No							
	Source Breakers	Main ☐ N/A	Long Time Settings ☐ N/A Pickup: Delay: s	Short Time Settings ☐ N/A Pickup: Delay: s	Instantaneous Settings ☐ N/A Pickup: Delay: s	Ground Settings ☐ N/A Pickup: Delay: s		
		Alt (Gen) ☐ N/A	Long Time Settings ☐ N/A Pickup: Delay: s	Short Time Settings ☐ N/A Pickup: Delay: s	Instantaneous Settings ☐ N/A Pickup: Delay: s	Ground Settings ☐ N/A Pickup: Delay: s		
	Feeder Breakers	P-L01	Long Time Settings ☐ N/A Pickup: Delay: s	Short Time Settings ☐ N/A Pickup: Delay: s	Instantaneous Settings ☐ N/A Pickup: Delay: s			
		P-L02 ☐ N/A	Long Time Settings ☐ N/A Pickup: Delay: s	Short Time Settings ☐ N/A Pickup: Delay: s	Instantaneous Settings ☐ N/A Pickup: Delay: s			
		P-L03 ☐ N/A	Long Time Settings ☐ N/A Pickup: Delay: s	Short Time Settings ☐ N/A Pickup: Delay: s	Instantaneous Settings ☐ N/A Pickup: Delay: s			
		P-L04 ☐ N/A	Long Time Settings ☐ N/A Pickup: Delay: s	Short Time Settings ☐ N/A Pickup: Delay: s	Instantaneous Settings ☐ N/A Pickup: Delay: s			
		☐ N/A	Long Time Settings ☐ N/A Pickup: Delay: s	Short Time Settings ☐ N/A Pickup: Delay: s	Instantaneous Settings ☐ N/A Pickup: Delay: s			
☐ N/A		Long Time Settings ☐ N/A Pickup: Delay: s	Short Time Settings ☐ N/A Pickup: Delay: s	Instantaneous Settings ☐ N/A Pickup: Delay: s				
☐ N/A		Long Time Settings ☐ N/A Pickup: Delay: s	Short Time Settings ☐ N/A Pickup: Delay: s	Instantaneous Settings ☐ N/A Pickup: Delay: s				
☐ N/A		Long Time Settings ☐ N/A Pickup: Delay: s	Short Time Settings ☐ N/A Pickup: Delay: s	Instantaneous Settings ☐ N/A Pickup: Delay: s				
Relays	Power Failure ☐ N/A	% Unbalance Settings ☐ N/A Percentage:	Delay Time Settings ☐ N/A Restart: s Trip: s	Line Voltage Settings ☐ N/A Voltage: VAC				

MCC Instrument Signals	Verify Control Signals Between MCC and PLC				Comments:			
	Test Preparation: Test physical signals rather than installing jumpers for signals							
	Field Wires Labelled at Both Ends: ☐ Yes ☐ No							
	Discrete Signals	Signal Description	Display Light Illuminates	Signal Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal		
		TVSS Status ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A		
Power Failure ☐ N/A		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A			
Utility Power ☐ N/A		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A			

		COMMISSIONING FORM MOTOR CONTROL CENTRE		Page 4 of 4 Equipment Tag:
Project	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

MCC Instrument Testing	Power Meter Fully Functions: ☐ Yes ☐ No ☐ N/A				Comments:					
	TVSS Relay Fully Functions: ☐ Yes ☐ No ☐ N/A									
	TVSS Relay Fail-Safe Monitoring: ☐ Yes ☐ No ☐ N/A									
	TVSS Relay Resets Automatically: ☐ Yes ☐ No ☐ N/A									
	Power Fail Relays Fully Functions: ☐ Yes ☐ No ☐ N/A				Manufacturer: Model: Calibration Date:					
	Power Fail Relays Fail-Safe Monitoring: ☐ Yes ☐ No ☐ N/A									
	Power Fail Relays Reset Automatically: ☐ Yes ☐ No ☐ N/A									
	Power Meter	Description	Phase	Desired Value	Displayed Value	Measured Value	Difference	Acceptable		
		Voltage Line - Ground	A	347 V	V	V	V	☐ Yes ☐ No		
			B	347 V	V	V	V	☐ Yes ☐ No		
			C	347 V	V	V	V	☐ Yes ☐ No		
		Current Line - Ground	A	A	A	A	A	☐ Yes ☐ No		
			B	A	A	A	A	☐ Yes ☐ No		
			C	A	A	A	A	☐ Yes ☐ No		
		TVSS Relay	Desired Phase Line Voltage			Test Meter Measured Phase Line Voltage			State (0 / 1)	State Description (Normal / Alarm)
			A - B	B - C	C - A	A - B	B - C	C - A		
	600 V		600 V	600 V	V	V	V			
	Test Surge		600 V	600 V	V	V	V			
	600 V		Test Surge	600 V	V	V	V			
	600 V		600 V	Test Surge	V	V	V			
Power Fail Relay	Desired Phase Line Voltage			Test Meter Measured Phase Line Voltage			State (0 / 1)	State Description (Normal / Alarm)		
	A - B	B - C	C - A	A - B	B - C	C - A				
	600 V	600 V	600 V	V	V	V				
	0 V	600 V	600 V	V	V	V				
	600 V	0 V	600 V	V	V	V				
	600 V	600 V	0 V	V	V	V				

Final Analysis	Returned to Service: ☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required: ☐ Yes ☐ No	
	Repair / Replacement Required: ☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

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		COMMISSIONING FORM OUTDOOR LIGHTING		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

Outdoor Lighting Location & Data	Battery Bank Location:		Battery Bank Equipment No.		Panel Feed: Circuit No.		Control Panel No.		Applicable Drawings:	
	Outdoor Lighting Fixtures:	Manufacturer:			Catalog No.			Control Type		
		Rated Voltage: VAC		Input Current: A		Lamp Wattage: W		Outdoor Fixtures Qty:		
		Installed on Outdoor Walls:			☐ North ☐ East ☐ South ☐ West					
	Photocell:	Manufacturer:			Catalog No.		Adjustable Turn-On Level:		☐ Yes ☐ No	
		Rated Voltage: VAC			Rated Current: A		Adjustable Turn-Off Level:		☐ Yes ☐ No	
						Installed Location:		Turn-On / Turn-Off Ratio: ☐ N/A		

Visual Inspection / Cleaning	Identification Lamacoids Installed: ☐ Yes ☐ No				Lamps Properly Aimed: ☐ Yes ☐ No			
	Visual Signs of Moisture: ☐ Yes ☐ No				All Lamps Properly Operate: ☐ Yes ☐ No			
	Outdoor Lights Moisture Proof Rated: ☐ Yes ☐ No ☐ N/A				Outdoor Light Levels Adjustable: ☐ Yes ☐ No ☐ N/A			
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor				Cable Connections: ☐ Good ☐ Acceptable ☐ Poor			
	Ground Connections: ☐ Good ☐ Acceptable ☐ Poor				Connections Properly Sealed: ☐ Good ☐ Acceptable ☐ Poor			
	Photocell Installation: ☐ Good ☐ Acceptable ☐ Poor				Dimming Controller Installation: ☐ Good ☐ Acceptable ☐ Poor			
	Cables Supported Appropriately: ☐ Yes ☐ No				Equipment Cleaned: ☐ Yes		Photograph Taken: ☐ Yes	
	Comments:							

Photocell & Controller Testing	Battery Bank Temperature Before Starting Testing: °C		Battery Bank Temperature After Testing Completed: °C		Test Summary ☐ Test Passed ☐ Test Inconclusive ☐ Further Investigation Required ☐ Test Failed
	Photocell Turn-On Level: foot-candles		Photocell Turn-On Time: sec		
	Photocell Turn-Off Level: foot-candles		Photocell Turn-Off Time: sec		
	Measured Light Output: foot-candles		Dimming Controller Output: V		
	Comments:				

Operational Testing	Outdoor Lights Turn On and Off by Photocell in Automatic Mode: ☐ Yes ☐ No			Outdoor Lights Turn On in Manual Mode: ☐ Yes ☐ No		
	Light Output Adjustable by Dimming Controller: ☐ Yes ☐ No			Photocell Turn-On Level: foot-candles		
	Operating Modes	Mode Description		Outdoor Lights On		Time For Outdoor Lights to Turn On
		Automatic Mode – Normal Operation		No		N/A
		Automatic Mode – Photocell Operation		☐ Yes ☐ No		sec
		Manual Mode – Individual Normal Lighting Circuits Fail		☐ Yes ☐ No		sec
Comments:						

		COMMISSIONING FORM OUTDOOR LIGHTING		Page 2 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Final Analysis	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

		COMMISSIONING FORM PANELBOARD		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

Panelboard Location & Data	Panel Equipment No.			Panel Location:		Fed From:	
	Drawings:	Single Line:		Panel Schedule:		Schematic:	
	Panelboard Ratings:	Manufacturer:		Model:		Serial #:	
		Ampacity: Withstand:	A kAIC	Rated Voltage:	VAC	No. of Circuits:	☐ Single Phase ☐ 3-wire ☐ Three Phase ☐ 4-wire
	Main Breaker:	☐ Top Installed ☐ Bottom Installed ☐ N/A	Rating: A	Inst. Setting: ☐ N/A	A	Manufacturer: Model:	

Branch Breakers	<i>List all branch breakers installed. Separate each common size breaker for number of poles (1-pole, 2-pole & 3-pole) and GFCI rated.</i>						
	Breaker Size (A)	No. of Poles	GFCI Rated (Yes / No)	Manufacturer	Model No.	Interrupting Rating (kA)	Notes
Comments:							

Visual Inspection / Cleaning	Panelboard Lamacoid Installed: ☐ Yes ☐ No			Visual Signs of Overheating: ☐ Yes ☐ No		
	Power Cables Labeled: ☐ Yes ☐ No			Any Exposed Energized Metal: ☐ Yes ☐ No		
	Typewritten Directory Installed: ☐ Yes ☐ No			All Breaker Sizes Match Drawings: ☐ Yes ☐ No		
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor			Enclosure Cover Secured: ☐ Good ☐ Acceptable ☐ Poor		
	Door Mechanical: ☐ Good ☐ Acceptable ☐ Poor			Ground Connection: ☐ Good ☐ Acceptable ☐ Poor		
	Exercised Main Breaker: ☐ Yes ☐ No ☐ N/A			Exercised All Branch Circuit Breakers: ☐ Yes ☐ No		
	Cables Supported Appropriately: ☐ Yes ☐ No			Equipment Cleaned: ☐ Yes Photograph Taken: ☐ Yes		
	Comments:					

Main Breaker Measurements	Test	Resistance			Test Summary
		Phase A	Phase B	Phase C	
	Main Breaker Pole Measurements	μΩ	μΩ	μΩ	☐ Test Passed ☐ Further Investigation Required. ☐ Test Failed
	Comments:				

		COMMISSIONING FORM PANELBOARD		Page 2 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Insulation Resistance Test	Test Preparation: Source: ☐ Disconnected ☐ Connected with Source Isolated	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.				
	WARNING: DISCONNECT INCOMING SOURCE POWER CABLES PRIOR TO TEST.					
	<i>Test</i>	<i>Voltage</i>	<i>Insulation Resistance</i>			Ground all phases not under test!
			<i>Phase A</i>	<i>Phase B</i>	<i>Phase C</i>	
	Main Breaker Line Side to Ground	500 VDC	MΩ	MΩ	MΩ	Test Summary ☐ Test Passed ☐ Further Investigation Required. ☐ Test Failed
	Main Breaker Load Side to Ground	500 VDC	MΩ	MΩ	MΩ	
	Bus Bars to Ground	500 VDC	MΩ	MΩ	MΩ	
Comments:						

Final Analysis	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

		COMMISSIONING FORM PLC ANALOG INPUT CARD		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

PLC Data	PLC Enclosure Name:		PLC Manufacturer:		PLC Model:	
	Card Catalog No.		Rated Input Voltage: VDC		Inputs 0-7 Fuse No.	
	Documents:	I/O Wiring Dwg:	DNP3 I/O File:		Control Narrative:	
	PLC:	Equipment Tag:	Rack:		Module:	

Visual Inspection	Pre-Manufactured Cable Labelled: ☐ Yes ☐ No		Pre-Manufactured Cable Tag:	
	All Inputs Wired to Terminal Blocks: ☐ Yes ☐ No		All Input Wires Labelled at Terminal Blocks: ☐ Yes ☐ No	
	All Inputs Separately Fused: ☐ Yes ☐ No		All Inputs Wired at Analog Input Card: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor	Wire Connections Both Ends: ☐ Good ☐ Acceptable ☐ Poor		
	Fully Functioning Card: ☐ Good ☐ Acceptable ☐ Poor	Card Secured on PLC Rack: ☐ Good ☐ Acceptable ☐ Poor		
	Card Fully Programmed: ☐ Good ☐ Acceptable ☐ Poor	All Card Input Lights Work: ☐ Good ☐ Acceptable ☐ Poor		
	Comments:			

Point	Physical Tag	Description	Signal Type	Signal Mapping	PLC Input	Local HMI	SCADA	Condition Pickup Level	Pass (P/F)
0			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
1			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
2			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
3			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
4			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
5			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
6			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
7			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	

		COMMISSIONING FORM PLC ANALOG INPUT CARD		Page 2 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Final Analysis	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

Note: The Engineer Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

		COMMISSIONING FORM PLC ANALOG INPUT RTD CARD		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

PLC Data	PLC Enclosure Name:		PLC Manufacturer:		PLC Model:
	Card Catalog No.		Rated Input Voltage:	VDC	Inputs 0-7 Fuse No.
	Documents:	I/O Wiring Dwg:	DNP3 I/O File:		Control Narrative:
	PLC:	Equipment Tag:	Rack:		Module:

Visual Inspection	Pre-Manufactured Cable Labelled:		☐ Yes	☐ No	Pre-Manufactured Cable Tag:	
	All Inputs Wired to Terminal Blocks:		☐ Yes	☐ No	All Input Wires Labelled at Terminal Blocks: ☐ Yes ☐ No	
	All Inputs Separately Fused:		☐ Yes	☐ No	All Inputs Wired at Analog Input RTD Card: ☐ Yes ☐ No	
	Cleanliness:	☐ Good	☐ Acceptable	☐ Poor	Wire Connections Both Ends: ☐ Good ☐ Acceptable ☐ Poor	
	Fully Functioning Card:	☐ Good	☐ Acceptable	☐ Poor	Card Secured on PLC Rack: ☐ Good ☐ Acceptable ☐ Poor	
	Card Fully Programmed:	☐ Good	☐ Acceptable	☐ Poor	All Card Input Lights Work: ☐ Good ☐ Acceptable ☐ Poor	
	Comments:					

Point	Physical Tag	Description	Signal Type	Signal Mapping Range	PLC Input	Local HMI	SCADA	Condition Pickup Level	Pass (P/F)
0			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
1			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
2			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
3			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
4			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
5			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
6			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
7			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	

		COMMISSIONING FORM PLC ANALOG INPUT RTD CARD		Page 2 of 2
		Equipment Tag:		
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Final Analysis	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

Note: The Engineer Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

		COMMISSIONING FORM PLC ANALOG OUTPUT CARD		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

PLC Data	PLC Enclosure Name:		PLC Manufacturer:		PLC Model:	
	Card Catalog No.		Rated Output Voltage: VAC / VDC		Outputs 0-3 Fuse No.	
	Documents:	I/O Wiring Dwg:	DNP3 I/O File:		Control Narrative:	
	PLC:	Equipment Tag:	Rack:		Module:	

Visual Inspection	Pre-Manufactured Cable Labelled: ☐ Yes ☐ No		Pre-Manufactured Cable Tag:	
	All Outputs Wired to Terminal Blocks: ☐ Yes ☐ No		All Output Wires Labelled at Terminal Blocks: ☐ Yes ☐ No	
	All Outputs Separately Fused: ☐ Yes ☐ No		All Outputs Wired at Analog Input Card: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Wire Connections Both Ends: ☐ Good ☐ Acceptable ☐ Poor	
	Fully Functioning Card: ☐ Good ☐ Acceptable ☐ Poor		Card Secured on PLC Rack: ☐ Good ☐ Acceptable ☐ Poor	
	Card Fully Programmed: ☐ Good ☐ Acceptable ☐ Poor		All Card Input Lights Work: ☐ Good ☐ Acceptable ☐ Poor	
	Comments:			

Point	Physical Tag	Description	Signal Type	State Mapping	PLC Input	SCADA	Field Device	Pass (P/F)
0			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low mA/V = High mA/V =	☐	☐	☐	
1			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low mA/V = High mA/V =	☐	☐	☐	
2			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low mA/V = High mA/V =	☐	☐	☐	
3			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low mA/V = High mA/V =	☐	☐	☐	

Final Analysis	Returned to Service: ☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required: ☐ Yes ☐ No	
	Repair / Replacement Required: ☐ Yes ☐ No	

		COMMISSIONING FORM PLC ANALOG OUTPUT CARD		Page 2 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

Note: The Engineer Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

		COMMISSIONING FORM PLC DISCRETE INPUT CARD		Page 1 of 3
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

PLC Data	PLC Enclosure Name:		PLC Manufacturer:		PLC Model:	
	Card Catalog No.		Rated Inputs Voltage: VAC / VDC		Inputs 0-15 Fuse No. Inputs 16-31 Fuse No.	
	Documents:	I/O Wiring Dwg:	DNP3 I/O File:		Control Narrative:	
	PLC:	Equipment Tag:	Rack:		Module:	

Visual Inspection	Pre-Manufactured Cable Labelled: ☐ Yes ☐ No		Pre-Manufactured Cable Tag:	
	All Inputs Wired to Terminal Blocks: ☐ Yes ☐ No		All Input Wires Labelled at Terminal Blocks: ☐ Yes ☐ No	
	All Inputs Separately Fused: ☐ Yes ☐ No		All Inputs Wired at Discrete Input Card: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor	Wire Connections Both Ends: ☐ Good ☐ Acceptable ☐ Poor		
	Fully Functioning Card: ☐ Good ☐ Acceptable ☐ Poor	Card Secured on PLC Rack: ☐ Good ☐ Acceptable ☐ Poor		
	Card Fully Programmed: ☐ Good ☐ Acceptable ☐ Poor	All Card Input Lights Work: ☐ Good ☐ Acceptable ☐ Poor		
	Comments:			

TESTING: ALL DISCRETE INPUTS SHOULD BE TESTED AT THE INSTRUMENT END AS BEST AS POSSIBLE TO VERIFY CABLING. AS AN EXAMPLE, A MANUAL MODE STATUS WOULD BE TESTED AT THE MOTOR STARTER SELECTOR SWITCH TO VERIFY STATES AT THE PLC CARD.

Point	Physical Tag	Description	State	State Description	PLC Input	Local HMI	SCADA	Alarm	Pass (P/F)
0			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
1			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
2			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
3			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
4			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
5			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
6			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
7			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	

		COMMISSIONING FORM PLC DISCRETE INPUT CARD		Page 2 of 3 Equipment Tag:
Project	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

TESTING: ALL DISCRETE INPUTS SHOULD BE TESTED AT THE INSTRUMENT END AS BEST AS POSSIBLE TO VERIFY CABLING. AS AN EXAMPLE, A MANUAL MODE STATUS WOULD BE TESTED AT THE MOTOR STARTER SELECTOR SWITCH TO VERIFY STATES AT THE PLC CARD.

Point	Physical Tag	Description	State	State Description	PLC Input	Local HMI	SCADA	Alarm	Pass (P/F)
8			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
9			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
10			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
11			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
12			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
13			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
14			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
15			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	

TESTING: ALL DISCRETE INPUTS SHOULD BE TESTED AT THE INSTRUMENT END AS BEST AS POSSIBLE TO VERIFY CABLING. AS AN EXAMPLE, A MANUAL MODE STATUS WOULD BE TESTED AT THE MOTOR STARTER SELECTOR SWITCH TO VERIFY STATES AT THE PLC CARD.

Point	Physical Tag	Description	State	State Description	PLC Input	Local HMI	SCADA	Alarm	Pass (P/F)
16			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
17			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
18			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
19			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
20			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
21			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
22			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	

		COMMISSIONING FORM PLC DISCRETE INPUT CARD		Page 3 of 3
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

TESTING: ALL DISCRETE INPUTS SHOULD BE TESTED AT THE INSTRUMENT END AS BEST AS POSSIBLE TO VERIFY CABLING. AS AN EXAMPLE, A MANUAL MODE STATUS WOULD BE TESTED AT THE MOTOR STARTER SELECTOR SWITCH TO VERIFY STATES AT THE PLC CARD.

Point	Physical Tag	Description	State	State Description	PLC Input	Local HMI	SCADA	Alarm	Pass (P/F)
23			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
24			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
25			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
26			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
27			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
28			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
29			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
30			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
31			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	

Final Analysis	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative	City of Winnipeg			
☐ Not Witnessed				

Note: The Engineer Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

		COMMISSIONING FORM PLC DISCRETE OUTPUT CARD		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

PLC Data	PLC Enclosure Name:		PLC Manufacturer:		PLC Model:	
	Card Catalog No.		Rated Output Voltage: VAC / VDC		Outputs 0-7 Fuse No.	
	Documents:	I/O Wiring Dwg:	DNP3 I/O File:		Control Narrative:	
	PLC:	Equipment Tag:	Rack:		Module:	

Visual Inspection	Pre-Manufactured Cable Labelled: ☐ Yes ☐ No				Pre-Manufactured Cable Tag:			
	All Outputs Wired to Terminal Blocks: ☐ Yes ☐ No				All Output Wires Labelled at Terminal Blocks: ☐ Yes ☐ No			
	All Outputs Separately Fused: ☐ Yes ☐ No				All Outputs Wired at Discrete Output Card: ☐ Yes ☐ No			
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor				Wire Connections Both Ends: ☐ Good ☐ Acceptable ☐ Poor			
	Fully Functioning Card: ☐ Good ☐ Acceptable ☐ Poor				Card Secured on PLC Rack: ☐ Good ☐ Acceptable ☐ Poor			
	Card Fully Programmed: ☐ Good ☐ Acceptable ☐ Poor				All Card Input Lights Work: ☐ Good ☐ Acceptable ☐ Poor			
	Comments:							

Point	Physical Tag	Description	State	State Description	PLC Output	SCADA	Field Device	Pass (P/F)
0			0		☐	☐	☐	
			1		☐	☐	☐	
1			0		☐	☐	☐	
			1		☐	☐	☐	
2			0		☐	☐	☐	
			1		☐	☐	☐	
3			0		☐	☐	☐	
			1		☐	☐	☐	
4			0		☐	☐	☐	
			1		☐	☐	☐	
5			0		☐	☐	☐	
			1		☐	☐	☐	
6			0		☐	☐	☐	
			1		☐	☐	☐	
7			0		☐	☐	☐	
			1		☐	☐	☐	

Final Analysis	Returned to Service: ☐ Yes ☐ No		Comments:
	Monitoring / Further Inspection Required: ☐ Yes ☐ No		
	Repair / Replacement Required: ☐ Yes ☐ No		

		COMMISSIONING FORM PLC DISCRETE OUTPUT CARD		Page 2 of 2
				Equipment Tag:
Project	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

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		COMMISSIONING FORM PLC SYSTEM		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

PLC Data	PLC Enclosure Name:		PLC Manufacturer:	PLC Model:
	PLC No. of Modules (Slots)		Rated PLC Voltage: VAC / VDC	Communication to SCADA: ☐ Wired ☐ Wireless
	HMI Screen Installed: ☐ Yes ☐ N/A		HMI Manufacturer:	HMI Model:
	Documents:	Power Dist Schem.	Pump Ctrl Schematic:	Control Narrative:
		Network Diagram:	PLC Mode Schematic	DNP3 I/O List:
	PLC:	Power Supply Catalog No.	Rack Number	Module (Slot) No.
		Processor Card Catalog No.	Rack Number	Module (Slot) No.
		Communication Card Catalog No.	Rack Numbers	Module (Slot) No.

Visual Inspection / Cleaning	PLC Lamacoid Installed: ☐ Yes ☐ No	Visual Signs of Overheating: ☐ Yes ☐ No
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor	PLC Properly Mounted: ☐ Good ☐ Acceptable ☐ Poor
	Fully Functioning PLC: ☐ Good ☐ Acceptable ☐ Poor	PLC Fully Programmed: ☐ Good ☐ Acceptable ☐ Poor
	All Cards Work: ☐ Yes ☐ No ☐ N/A	Equipment Cleaned: ☐ Yes Photograph Taken: ☐ Yes
	Comments:	

Operational Testing	Wet Well Levels Start and Stop Pumps: ☐ Yes ☐ No ☐ N/A			Comments:		
	PLC Mode Cycles Pump Duties: ☐ Yes ☐ No ☐ N/A					
	HMI Screen Functions Properly: ☐ Yes ☐ No ☐ N/A					
	Alarm Test Switch Block Alarms to SCADA: ☐ Yes ☐ No ☐ N/A					
	HMI Screen Functions Properly: ☐ Yes ☐ No ☐ N/A					
	Local Mode Pushbutton Works: ☐ Yes ☐ No ☐ N/A			PLC Mode Pushbutton Works: ☐ Yes ☐ No ☐ N/A		
	PLC Reset Clears PLC Mode Fail Alarm: ☐ Yes ☐ No ☐ N/A			PLC Mode Fails to Local Mode: ☐ Yes ☐ No ☐ N/A		
	PLC Mode Operation	Pump Duty	Setpoint	Setpoint Level	Output Changes Pump Status	Duty Output Appears on HMI
		Duty 1	Start	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
			Stop	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Duty 2 ☐ N/A	Start	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
			Stop	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Duty 3 ☐ N/A	Start	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
			Stop	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Duty 4 ☐ N/A	Start	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Stop	m		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A		

		COMMISSIONING FORM PLC SYSTEM		Page 2 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

SCADA Testing	SCADA Wireless Connection Works: ☐ Yes ☐ No ☐ N/A			Comments:		
	SCADA Wired Connection Works: ☐ Yes ☐ No ☐ N/A					
	SCADA Can Change Level Transmitter Selection: ☐ Yes ☐ No ☐ N/A					
	SCADA Can Change Start Duty Setpoints: ☐ Yes ☐ No ☐ N/A			SCADA Can Change Stop Duty Setpoints: ☐ Yes ☐ No ☐ N/A		
	SCADA Can Put PLC into Local Mode: ☐ Yes ☐ No ☐ N/A			SCADA Can Put PLC into PLC Mode: ☐ Yes ☐ No ☐ N/A		
	SCADA Operation	Pump No.	SCADA Can Change Pump Speed Setpoints		SCADA Can Take Pump Out of Service and Put in Service	SCADA Can Start a Backflush cycle on Pump
		P-L01	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		P-L02 ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		P-L03 ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		P-L04 ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

PLC Settings	Program PLC Settings to Match Control Narrative.		Comments:	
	Programming Applied to PLC: ☐ Yes ☐ No			
	PLC Programming by:	Company Name		

Final Analysis	Returned to Service: ☐ Yes ☐ No	Comments:	
	Monitoring / Further Inspection Required: ☐ Yes ☐ No		
	Repair / Replacement Required: ☐ Yes ☐ No		

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

Note: The Engineer Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

		COMMISSIONING FORM TEMPORARY GENERATOR CONNECTION BOX		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

Generator Connection Box Location & Data	Downstream Load:		Equipment No.		Location:		
	Drawings:	Single Line:		Grounding:		Site Plan:	
		Manufacturer:		Model:		Serial #:	
	Enclosure Ratings:	Ampacity:	A	Rated Voltage:	VAC	No. of Poles:	Phase Wiring: ☐ 3W ☐ 4W
		Withstand:	kAIC				
Lug Ratings:	☐ Installed ☐ N/A		Rating:	A	Type:	Manufacturer: Model:	

Visual Inspection / Cleaning	Generator Box Lamacoid Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No	
	Power Cables Labelled at Both Ends: ☐ Yes ☐ No		Phases Labelled Inside Enclosure: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Power Cable Connections: ☐ Good ☐ Acceptable ☐ Poor	
	Ground Connections: ☐ Good ☐ Acceptable ☐ Poor		Bus Bars and Insulators: ☐ Good ☐ Acceptable ☐ Poor	
	Door Mechanical: ☐ Good ☐ Acceptable ☐ Poor		Enclosure Hole Seal Plug Installed: ☐ Yes ☐ No	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

Insulation Resistance Test	Test Preparation:	Source: ☐ Disconnected ☐ Connected with Source Isolated	Load: ☐ Disconnected ☐ Connected with Load Isolated	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.		
	WARNING: Isolate Source and Load Cabling Prior To Test. Use 500 VDC for < 300 V rated and 1000 VDC for > 300 V rated.					
	Test	Voltage	Insulation Resistance			Ground all phases not under test!
			Phase A	Phase B	Phase C	
	Phase to Ground	VDC	MΩ	MΩ	MΩ	Test Summary ☐ Test Passed ☐ Further Investigation Required. ☐ Test Failed
	Phase to Neutral	VDC	MΩ	MΩ	MΩ	
Comments:						

Final Analysis	Returned to Service: ☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required: ☐ Yes ☐ No	
	Repair / Replacement Required: ☐ Yes ☐ No	

		COMMISSIONING FORM TEMPORARY GENERATOR CONNECTION BOX		Page 2 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

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		COMMISSIONING FORM UNIT HEATER		Page 1 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

Unit Heater Location & Data	Heater Equipment No.		Heater Location:		Fed From:	
	Drawings:	Single Line:		Mech. Schedule:		Schematic: ☐ N/A
		Manufacturer:		Model:		Serial #:
	Unit Heater Ratings:	Power: kW	Rated Voltage: VAC	Full Load Amps: A	☐ 1-Phase ☐ 3-Phase	

Visual Inspection / Cleaning	Unit Heater Lamacoid Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No	
	Power Cables Labelled: ☐ Yes ☐ No		Appropriate Breaker / Fuse Size Installed: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor	Heater Properly Installed: ☐ Good ☐ Acceptable ☐ Poor		
	Power Connection: ☐ Good ☐ Acceptable ☐ Poor	Ground Connection: ☐ Good ☐ Acceptable ☐ Poor		
	Remote Thermostat Installed: ☐ Yes ☐ No ☐ N/A	Remote Thermostat Cable Labelled ☐ Yes ☐ No ☐ N/A		
	Cables Supported Appropriately: ☐ Yes ☐ No	Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes	
	Comments:			

Heater Electrical Testing	Test Preparation:		Setup: ☐ Isolated	Power Cable ☐ Disconnected ☐ Connected	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.	
	WARNING: DISCONNECT ALL FIELD POWER CABLES FROM MOTOR PRIOR TO TEST.					
	Test	Test Voltage	Insulation Resistance			Ground all phases not under test!
			Phase A	Phase B	Phase C	
	Line to Ground	VDC	MΩ	MΩ	MΩ	Test Summary ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed
	Test	Tester	Resistance			
			Phases A-B	Phases B-C	Phases C-B	
	Heating Element	Fluke Meter	μΩ	μΩ	μΩ	
Comments:						

Full Load Testing	TESTING: HEATER TO BE RUN FOR FIVE (5) MINUTES UNDER FULL LOAD PRIOR TO RECORDING VALUES.					
	Temperature:	Turn On Setpoint: °C		Actual Turn On Setpoint: °C		
	Heater Measured Current:	Phase A A	Phase B A	Phase C A		
	Comments:					

		COMMISSIONING FORM UNIT HEATER		Page 2 of 2
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Final Analysis	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative ☐ Not Witnessed	City of Winnipeg			

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		COMMISSIONING FORM VARIABLE FREQUENCY DRIVE		Page 1 of 3
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

Project Contact	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

VFD Location & Data	VFD Equipment No.		VFD Location:		Downstream Load.		
	Drawings:	Single Line:		Schematic:		Connection:	
		Manufacturer:		Model:		Serial #:	
	VFD:	Power Rating:		Rated Voltage:	VAC	Current Rating:	A
						Control Voltage:	VAC
	Circuit Protection:	☐ Breaker	Rating:	A	Inst. Setting:	A	Manufacturer:
		☐ Fuse	Model:				
	Line Reactor:	☐ Installed	Rating:				Manufacturer:
		☐ N/A	Model:				
	Harmonic Filter:	☐ Installed	Rating:				Manufacturer:
		☐ N/A	Model:				
	Load Reactor:	☐ Installed	Rating:				Manufacturer:
		☐ N/A	Model:				
	Bypass Contactor:	Type:	☐ NEMA	Manufacturer:		Model:	
		☐ IEC	NEMA Size:		☐ N/A	IEC Rating:	
Bypass Overload Protection:	☐ Thermal	Class:	☐ 10	Setting / Rating:	A	Manufacturer:	
	☐ Electronic	☐ 20					
	☐ Not Applicable	☐ 30				Model:	
		☐ Unknown					
Current Transformer:		Ratio:		:	A	Type:	
Control Power Transformer:		Size:	VA	Secondary Voltage:	V	Primary Fuse:	
						Secondary Fuse:	
						A	

Motor Data	Equipment Tag:		Power:		kW / HP	Voltage:	VAC
	Full Load Amps:	A	Service Factor:	Inverter Duty Rated:	☐ Yes ☐ No	Insulation Class:	

Visual Inspection / Cleaning	VFD Lamacoid Installed:		☐ Yes ☐ No	Visual Signs of Overheating:		☐ Yes ☐ No
	Power Cables Labelled at Both Ends:		☐ Yes ☐ No	Control Cables Labelled at Both Ends:		☐ Yes ☐ No
	Cleanliness:		☐ Good ☐ Acceptable ☐ Poor	Power Cable Connections:		☐ Good ☐ Acceptable ☐ Poor
	Control Cable Connections:		☐ Good ☐ Acceptable ☐ Poor	Elect./ Mech. Interlocks:		☐ Good ☐ Acceptable ☐ Poor
	Ground Connections:		☐ Good ☐ Acceptable ☐ Poor	Contactor Condition:		☐ Good ☐ Acceptable ☐ Poor
	Door Mechanical:		☐ Good ☐ Acceptable ☐ Poor	Contact Alignment:		☐ Good ☐ Acceptable ☐ Poor
	Verify Bypass O/L element is correctly sized for the load:		☐ Yes ☐ No ☐ N/A	Exercised Circuit Breaker / Disconnect:		☐ Yes ☐ No
	Cables Supported Appropriately:		☐ Yes ☐ No	Equipment Cleaned:		☐ Yes ☐ No
	Photograph Taken:		☐ Yes ☐ No			
	Comments:					

		COMMISSIONING FORM VARIABLE FREQUENCY DRIVE		Page 2 of 3 Equipment Tag:
Project	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

Contact / Pole Measurements	Test	Resistance			Test Summary ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed
		Phase A	Phase B	Phase C	
	Harmonic Filter Contactor Contact	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	
	Bypass Contactor Contact	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	
	Breaker / Disconnect	$\mu\Omega$	$\mu\Omega$	$\mu\Omega$	
Comments:					

Insulation Resistance Test	Test Preparation:		Setup: Source: ☐ Isolated Contactor: ☐ Open	Cable Destination / Load: ☐ Disconnected ☐ Connected with Load Isolated	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.		
	WARNING: DISCONNECT ALL POWER CABLES FROM VFD MODULE AND CAPACITORS, AND DISCONNECT ALL CONTROL POWER FUSES PRIOR TO TEST.						
	Test	Voltage	Insulation Resistance			Test Summary ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed	
			Phase A	Phase B	Phase C		
	VFD Line to Ground	1000 VDC	$M\Omega$	$M\Omega$	$M\Omega$		
	VFD Load to Ground	1000 VDC	$M\Omega$	$M\Omega$	$M\Omega$		
	VFD Line to Load	1000 VDC	$M\Omega$	$M\Omega$	$M\Omega$		
	Harmonic Filter Contactor Line to Ground	1000 VDC	$M\Omega$	$M\Omega$	$M\Omega$		
	Harmonic Filter Contactor Load to Ground	1000 VDC	$M\Omega$	$M\Omega$	$M\Omega$		
	Harmonic Filter Contactor Line to Load	1000 VDC	$M\Omega$	$M\Omega$	$M\Omega$		
	Bypass Contactor Line to Ground	1000 VDC	$M\Omega$	$M\Omega$	$M\Omega$		
	Bypass Contactor Load to Ground	1000 VDC	$M\Omega$	$M\Omega$	$M\Omega$		
Bypass Contactor Line to Load	1000 VDC	$M\Omega$	$M\Omega$	$M\Omega$			
Comments:							

Full Load Operational Testing	Ramp Up Time		Specified: sec	Actual: sec		
	Ramp Down Time		Specified: sec	Actual: sec		
	Motor Measured Current		Phase A A	Phase B A	Phase C A	
	VFD Displayed Current		Phase A A	Phase B A	Phase C A	
	PLC HMI Screen Displayed Motor Current: A			Ammeter Current in Bypass Mode: ☐ Yes ☐ No ☐ N/A		
	Potentiometer Adjusts Speed in Manual Mode: ☐ Yes ☐ No			Potentiometer Adjusts Speed in Local Auto Mode: ☐ Yes ☐ No		
	Operating Modes	Mode Description	Forward Run Start & Stop		Reverse Run Start & Stop	
		VFD Manual Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A		
		VFD Automatic Mode – PLC Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A		
		VFD Automatic Mode – Local Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A		
		Bypass Manual Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A		
		Bypass Automatic Mode – Local Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A		
Comments:						

		COMMISSIONING FORM VARIABLE FREQUENCY DRIVE		Page 3 of 3
				Equipment Tag:
Project	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

VFD Settings	Program VFD Settings to Match Setting Letter.		Comments:
	Settings Applied to VFD: ☐ Yes ☐ No		
	VFD Setting Letter File:		

VFD & PLC Control Signals	Verify Control Signals Between VFD and PLC			Comments:		
	Test Preparation: Test physical signals rather than installing jumpers for signals					
	Field Wires Labelled at Both Ends: ☐ Yes ☐ No					
	Discrete Signals	Signal Description	Pilot Light Illuminates	Signal Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
		Ready	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		VFD Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Bypass Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Manual Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Auto Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Forward Run	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Reverse Run	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		VFD Fault	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Bypass Fault	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Vibration Lockout	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Analog Signals	Signal Description	Measured Signal	Signal received At VFD / PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
Speed Input		mA	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	
Speed Reference		mA	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	
Motor Current		mA	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	

Final Analysis	Returned to Service: ☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required: ☐ Yes ☐ No	
	Repair / Replacement Required: ☐ Yes ☐ No	

	Company	Name	Signature	Date (yyyy/mm/dd)
General Contractor Representative				
Engineer Representative				
City Representative	City of Winnipeg			
☐ Not Witnessed				

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